Patent claims:

1. A monomeric or multimeric amidase characterized in that the amidase contains an N-terminal sequence **SEQ ID No. 1** or an N-terminal sequence having a homology of greater than 50% with **SEQ ID No. 1**.

2. A monomeric or multimeric amidase characterized in that the amidase contains a sequence **SEQ ID No. 2** or a sequence having a homology of greater than 50% with **SEQ ID No. 2**.

3. The monomeric or multimeric amidase as claimed in one of claims 1 and 2, characterized in that the amidase contains an N-terminal sequence **SEQ ID No. 1** and **SEQ ID No. 2** or an N-terminal sequence having a homology of greater than 50% with **SEQ ID No. 1** and a sequence having a homology of greater than 50% with **SEQ ID No. 2**.

4. The amidase as claimed in one of claims 1 to 3 having a molecular weight of the native monomeric enzyme between 47 and 53 kDa.

5. The amidase as claimed in one of claims 1 to 4, characterized in that the enzyme is obtainable from thermophilic bacteria.

6. The amidase as claimed in one of claims 1 to 4, characterized in that the enzyme is obtainable from Actinomycetes.

7. The amidase as claimed in one of claims 1 to 4, characterized in that the enzyme is obtainable from *Pseudonocardia thermophila*.

8. The amidase as claimed in one of claims 1 to 7, obtainable by a method comprising the method steps

a) centrifugation of the cell-free crude extract of a thermophilic bacterium at 10 000 to 20 000 rpm and subsequent addition of a 1 M salt solution,

b) chromatographic separation of the supernatant on a hydrophobic column using a reverse gradient of a salt solution from 1 M to 0 M,

c) ultrafiltration of the fraction showing amidase activity obtained from b) on a 10 kDa cut-off membrane,

d) ion-exchange chromatography of the protein fraction obtained from c) using a gradient from 0 M to 0.5 M of a salt solution,

e) chromatography of the fraction showing amidase activity obtained from d) using a 100 to 200 mM salt solution and desalting the purified amidase fraction.

9. The amidase as claimed in one of claims 1 to 8, characterized in that the N-terminal end of the amidase containing the **SEQ ID No. 1** or a sequence having a homology of greater than 50% with **SEQ ID No. 1** is completely or partly deleted.

10. The amidase as claimed in one of claims 1 to 9, characterized in that the **SEQ ID No. 2** or a sequence having a homology of greater than 50% with **SEQ ID No. 2** of the amidase is completely or partly deleted.

11. The amidase as claimed in one of claims 1 to 10, characterized in that the enzyme is present as monomer or dimer, consisting of two monomeric amidase units as claimed in one of claims 1 to 10.

12. The amidase as claimed in one of claims 1 to 10, characterized in that the enzyme has an amino acid sequence according to **SEQ ID No. 3** or an amino acid sequence having a homology of at least 50%

therewith.

13. A nucleic acid coding for an inventive amidase as claimed in one of claims 1 to 12, characterized in that the nucleic acid has a sequence according to **SEQ ID No. 4** or a nucleotide sequence having a homology of greater than 60% therewith.

14. The use of amidases as claimed in one of the preceding claims for the hydrolysis of amides or for acylation.

15. The use of amidases as claimed in claim 14 for the hydrolysis of aliphatic amides, aromatic amides, cyclic amides, heterocyclic amides or amino acid amides.

16. The use of amidases as claimed in claim 15 for the enantioselective hydrolysis of amides.

17. The use of amidases as claimed in claim 16 for preparing *S*-stereoisomeric acids.

18. A method for the enzymatically catalyzed hydrolysis of amides, characterized in that the reaction is catalyzed by an amidase as claimed in claims 1 to 13.

19. The method as claimed in claim 18, characterized in that the reaction is carried out at a temperature between 30°C and 85°C.

20. The method as claimed in claim 19, characterized in that the reaction is carried out at a temperature between 50°C and 75°C.

21. The method as claimed in one of claims 18 to 20, characterized in that the reaction proceeds at a pH between 3.5 and 11.5.